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EXAMINER

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ART UNIT	PAPER NUMBER
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1764

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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 09/560,469
Filing Date: April 28, 2000
Appellant(s): FERNANDO ET AL.

Joseph G. Curatolo
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 6/14/04.

(1) *Real Party in Interest*

A statement identifying the real party in interest is contained in the brief.

(2) *Related Appeals and Interferences*

A statement identifying the related appeals and interferences which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief.

(3) *Status of Claims*

The statement of the status of the claims contained in the brief is correct.

(4) *Status of Amendments After Final*

No amendment after final has been filed.

(5) *Summary of Invention*

The summary of invention contained in the brief is correct.

(6) *Issues*

The appellant's statement of the issues in the brief is correct.

However, upon reconsideration, the 112 issues have been withdrawn.

(7) *Grouping of Claims*

Appellant's brief includes a statement that group I, claims 1-11 and 41-42, and group II, claims 12-27, and 43-44, do not stand or fall together and provides reasons as set forth in 37 CFR 1.192(c)(7) and (c)(8).

(8) *Claims Appealed*

The copy of the appealed claims contained in the Appendix to the brief is correct.

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(9) Prior Art of Record

US 5,580,532	ROBINSON ET AL	12-1996
GB 1,481,133	JOHNSON ET AL	07-1977
JP 07-286514	SASAKI ET AL	10-1995

(10) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
 2. Ascertaining the differences between the prior art and the claims at issue.
 3. Resolving the level of ordinary skill in the pertinent art.
 4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
3. Claims 1-27, 41-44 are rejected under 35 U.S.C. § 103 as being unpatentable over Robinson et al (5,580,532) in view of JP 07-286514 and GB 1,481,133 (Johnson et al).

Robinson et al discloses a device 10 for the treatment of exhaust gas comprising:

a housing 12 and a fragile structure 18 mounted within the housing 12,

a support element 20 disposed between the housing 12 and the fragile structure 18, said support element comprising an integral, non-expanding sheet of ceramic fibers containing alumina and silica, said fibers having an average diameter of 1-10 microns.

The apparatus of Robinson et al is substantially the same as that of the instant claims, but is silent as to whether the fiber may be heat treated to crystalline form as claimed.

However, it appears that the claim is a product-by-process claim and when the patentability of a product-by-process claim is determined, the relevant inquiry is whether the product itself is patentable. *In re Brown*, 459 F.2d 531, 535, 173 USPQ 685, 688 (CCPA 1972). If a product is the same as or would have been obvious to one having ordinary skill in the art from a product of the prior art, the product is unpatentable even though the prior art product was made by different process. *In re Thorpe*, 777 F.2d 695, 697, 227 USPQ 964, 966 (Fed. Cir. 1985).

Since the product of the instant claim is substantial the same as that of Robinson et al, it is unpatentable even though the product of Robinson et al may be made by different process.

In any event, JP 07-286514 discloses provision of a ceramic fiber mat disposed between the catalyst and a housing in which the ceramic fibers have been heat treated at temperature of 1000-1300 °C in an effective amount of time to produce a crystalline structure having 0-10 % crystallinity as determined by x-ray diffraction. JP 07-286514 is silent as to the specific crystallite size thereof.

However, the ceramic fiber in JP 07-286514 is heat treated within the temperature range and time as that of the instant claims, the heat treated ceramic fiber of JP 07-286514 inherently possesses the same properties as that of the instant claims, e.g. the crystallinity percentage in JP

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07-286514 is the same as that of the instant claims. One having ordinary skill in the art would be expected that the other properties, such as the crystallite size, of the heat treated ceramic fiber would inherently be the same as that of the instant claims.

Furthermore, GB 1,481,133 discloses the conventionality of providing ceramic fibers used for thermal insulation in which the ceramic fibers have been heat treated at temperature of 950 to about 1050 °C from 10 minutes to one hour to produce a crystalline structure having crystalline size of less than 200 Å.

It would have been obvious to one having ordinary skill in the art to heat the ceramic fibers in the catalytic converter of Robinson et al to form the crystalline structure with the specific properties, such as the specific percentage of crystallinity as taught by JP 07-286514 and with the specific crystallite size as taught GB 1,481,133, if not inherent in JP 07-286514, since crystalline form of the ceramic fibers provides good resiliency which is required in mounting the ceramic fibers into the catalytic device as taught by GB 1,481,133 and JP 07-286514.

The specific pressure of the support element in the modified apparatus of Robinson et al would be inherent therein. Furthermore, it should be noted that pressure is not a part of the device and therefore is of no patentable moment in apparatus claims.

With respect to claims 41-44, the use of needle punching to hold the ceramic fiber mat is well known in the art as evidenced by JP 07-286514.

(11) Response to Argument

In several locations in the brief,

1. Appellants argue that the US '532 does not disclose the motivation to heat treat ceramic fibers of the support element under any time-temperature regimen.

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Such contention is not persuasive as although US '532 is silent as to whether the ceramic fibers in the support element may be heat treated to crystalline form as claimed, the secondary references are relied upon for such teaching.

Furthermore, it should be noted that the instant claim is a product-by-process claim and when the patentability of a product-by-process claim is determined, the relevant inquiry is whether the product itself is patentable. *In re Brown*, 459 F.2d 531, 535, 173 USPQ 685, 688 (CCPA 1972). If a product is the same as or would have been obvious to one having ordinary skill in the art from a product of the prior art, the product is unpatentable even though the prior art product was made by different process. *In re Thorpe*, 777 F.2d 695, 697, 227 USPQ 964, 966 (Fed. Cir. 1985). In this case, since the product of the instant claim is substantial the same as that of the US '532 (Robinson et al), it is unpatentable even though the product of Robinson et al may be made by different process.

2. Appellants argue that in contrast to the GB '133, the instant claims disclose two separate and distinct time-temperature regimens for heat treating ceramic fibers: a) heat treating at a temperature of 990 to at least 1050 °C for greater than 1 hour (claim 1), or b) heat treating at a temperature of greater than 1050 °C for an effective amount of time (claim 12).

The time-temperature regimen of claim 1 is outside GB '133 as GB '133 is strictly limited to a heating time period of 10 minutes to 1 hour. The time-temperature regimen of claim 12 is also outside the time-temperature regimen of GB '133 as GB '133 is strictly limited to a heating temperature of 990 to at least 1050 °C.

Such contention is not persuasive since GB '133 patent teaches that the ceramic fibers have been heat treated at temperature of 950 to about 1050 °C from 10 minutes to one hour. The

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temperature of 950 to about 1050 °C in the GB '133 patent falls well within the temperature range of instant claim 1. Since there is not much distinction between one hour (in GB '133 patent) and one hour one second (greater than one hour in the instant claim 1), the time in the GB patent meets the time in instant claim 1. The phrase of "about 1050 °C" in the GB '133 patent would include 1050.1 °C (which is greater than 1050 °C) and therefore meets the temperature of instant claim 12.

3. Appellants argue that the GB '133 patent expressly teaches away from the instant time-temperature regimens treat fibers because it teaches to terminate heat treating at 1050 °C and states that heat treating above 1050 °C tends to produce coarse-grained structure with poor handling properties.

Such contention is not persuasive as the instant claim 1 recites that heat treating of the ceramic fibers is at the temperature of 990 °C to at least 1050 °C which encompasses all temperatures of greater than or equal to 990 °C. The GB patent teaches that the ceramic fibers have been heat treated at temperature of 950 to about 1050 °C (page 2, lines 105-107) from 10 minutes to one hour. The temperature of 950 to about 1050 °C in the GB patent falls well within the range of instant claim 1. The phrase of "about 1050 °C" in the GB patent would include the temperature of 1050.1 °C (which is greater than 1050 °C) in instant claim 12.

Furthermore, GB '133 does not disclose that the heat treating of ceramic fibers must be terminated right away. Instead, the GB '133 patent discloses that care must be exercised to limit the heat treatment at temperature above 1050 °C in order to prevent excessive grain growth, since for the use of temperature above the devitrification temperature for an excessive period of time will tend to produce coarse-grained structure, e.g. structure with crystallite size of greater than

200 angstroms (A) and since GB '133 patent would like to produce a fine-grained fibers of less than 200 angstroms (A). However, the instant claims do not limit to fine-grained fibers only, e.g. the instant claims recite that the crystallite size of the fibers is from 50-500 angstroms, which also encompass the coarse-grained size of greater than 200 angstroms.

4. Appellants argue that the JP '514 patent does not teach heat treating the ceramic fibers under a time-temperature regimen of: a) heat treating at a temperature of at least 990 °C to less than about 1100 °C for greater than 1 hour, or b) heat treating at a temperature of greater than 1100 °C for an effective amount of time to develop fibers having at least about 5 to about 50% crystallinity as determined by x-ray diffraction and a crystallite size of about 50-500 A.

Such contention is not persuasive as the language of the claims does not commensurate in scope with such argument. The instant claim 1 recites that heat treating of the ceramic fibers is at the temperature of 990 °C to at least 1050 °C which encompasses all temperatures of greater than or equal to 990 °C. The temperature of 1000-1300 °C of JP patent (page 5, section 008), therefore, meets the instant claims. The crystallinity percentage recited in the JP patent also meets the instant claims.

Furthermore since the ceramic fiber in JP 07-286514 is heat treated within the temperature range and time as that of the instant claims, the heat treated ceramic fiber of JP 07-286514 inherently possesses the same properties as that of the instant claims.

5. Appellants argue that JP '514 only discloses the heat treating at 800 °C in 24 hours which is well below the devitrification temperature regimens of alumina-silicate ceramic fibers and the temperature of 800 °C is well outside of the time temperature regimens of the present invention.

Such contention is not persuasive as although JP '514 discloses the heat treating at 800 °C in one specific example, JP '514 generally discloses that the heat treatment of ceramic fibers is at temperature of 1000-1300 °C (page 5, section 008) which, therefore, meets the instant claims as set forth above.

It has been held that a disclosure in a reference is not limited to its specific illustrative examples, but must be considered as a whole to ascertain what would be realistically suggested thereby to one ordinary skill in the art. *In re Uhlig*, 54 CCPA 1300 376 F2d 320; 153 USPQ 460.

6. Appellants argue that Table I of the instant application shows an unexpected result, e.g. exerting a minimum holding pressure of 4 psi which is in direct contravention of the teaching of GB '133.

Such contention is not persuasive as the language of the instant claims is not commensurate with scope with Table I. For example, the temperatures in the examples 4 and 5 are specifically 1100 and 1200 °C, respectively, and the specific time is 2 hrs only, while the instant claims recite a broad range of temperature of greater than or equal 990 °C at a broad time period of greater than 1 hour (claim 1) or a broad range of greater than 1050 °C with no specific time period (claim 12). Moreover, no unexpected results were seen with respect to the pressure at 1000 cycles at 750 °C for the examples 1-5.

Furthermore, the examples in the table I show different fiber materials between the instant method (examples 1-4 and 5) and the method of the GB patent (examples C and D). Therefore it is unclear as to whether the results are due to the different fiber materials or different methods of heat treating the fiber materials.

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It appears that appellants argue that the method of the instant claims provides better ceramic fibers than the method of the prior art. However, this may be applicable for method claims, not for the product claim itself.

The instant claim is a product-by-process claim and when the patentability of a product-by-process claim is determined, the relevant inquiry is whether the product itself is patentable. *In re Brown*, 459 F.2d 531, 535, 173 USPQ 685, 688 (CCPA 1972). If a product is the same as or would have been obvious to one having ordinary skill in the art from a product of the prior art, the product is unpatentable even though the prior art product was made by different process. *In re Thorpe*, 777 F.2d 695, 697, 227 USPQ 964, 966 (Fed. Cir. 1985).

Since the product of the instant claim is substantially the same as that of the primary reference, Robinson et al, it is unpatentable even though the product of Robinson et al was made by different process.

(12) Conclusion

For the above reasons, it is believed that the rejections should be sustained.

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HT
September 3, 2004

Respectfully submitted,
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